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WATER SUPPLY OUTLOOK FOR ARIZONA



U. S. DEPARTMENT of AGRICULTURE ★ SOIL CONSERVATION SERVICE

Collaborating with
SALT RIVER VALLEY WATER USERS ASSOCIATION
and
ARIZONA WATER COMMISSION

Data included in this report were obtained by the agencies named above in cooperation
with Federal, State and private organizations listed inside the back cover of this report.

AS OF
FEB. 1, 1977

TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbia Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

COVER PHOTO: SNOW COURSE MEASUREMENTS BY A SURVEY TEAM IN UTAH'S WASATCH RANGE.
ORC-254-10

PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, West Technical Service Center, Room 510, 511 N.W. Broadway, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

| STATE | ADDRESS |
|--------------------|---|
| Alaska | Room 129, 2221 East Northern Lights Blvd., Anchorage, Alaska 99504 |
| Arizona | Room 3008, 6029 Federal Building, Phoenix, Arizona 85025 |
| Colorado (N. Mex.) | P. O. Box 17107, Denver, Colorado 80217 |
| Idaho | Room 345, 304 N. 8th. St., Boise, Idaho 83702 |
| Montana | P. O. Box 98, Bozeman, Montana 59715 |
| Nevada | P. O. Box 4850, Reno Nevada 89505 |
| Oregon | 1220 S.W. Third Ave., Portland, Oregon 97204 |
| Utah | 4012 Federal Bldg., 125 South State St., Salt Lake City, Utah 84138 |
| Washington | 360 U.S. Court House, Spokane, Washington 99201 |
| Wyoming | P. O. Box 2440, Casper, Wyoming 82602 |

PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Water Supply Forecast and Snow Surveys Unit, California Department of Water Resources, P. O. Box 388, Sacramento, California 95802 --- and for British Columbia by the Department of Lands, Forests and Water Resources, Water Resources Service, Parliament Building, Victoria, British Columbia



WATER SUPPLY OUTLOOK FOR ARIZONA

and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

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Mormon Mountain Snotel data site - left to right: isotopic and pillow snow sensors, temperature sensor and solar panel on tower, shelter and missile precipitation gage.

ARIZONA SUMMARY
as of
FEBRUARY 1, 1977

WATER SUPPLIES WILL BE ADEQUATE IN MOST AREAS OF ARIZONA.

STREAMFLOW IS EXPECTED TO BE MUCH BELOW AVERAGE, BUT
RESERVOIR STORAGE (EXCEPT FOR SAN CARLOS) IS GENERALLY
NOT FAR BELOW NORMAL.

SNOW COVER

Snowfall has been very light in most of Arizona this year. The only good storms of the season, occurring in early January did, however, leave modest amounts of snow in some areas. The last two weeks of warm weather has reduced the snow cover at the lower elevations considerably, but the few light storms have increased the high elevation snow slightly. Snow cover is particularly low at the higher elevations of the San Francisco Peaks and the White Mountains while relatively heavy snow exists in a narrow band from Mormon Lake to McNary.

Snow cover varies from 42% of average on the Gila Watershed to 95% on the Verde, with conditions on the Salt and Little Colorado Watersheds 61 and 49% of average respectively.

PRECIPITATION

Although watershed precipitation has been much above normal during January, the accumulated amount since November 1 is only 50 to 60% of average. January amounts of 3 to 4" were common at the higher elevations and 1 to 2" elsewhere. Only Greer received less than one inch.

SOIL MOISTURE

Soil moisture is generally below average, but the recent melting snow has greatly improved the surface soil moisture. A good storm in the next few weeks should yield good runoff from the lower elevations. At the higher elevations, where there has been little or no melt, soils are dry.

RESERVOIR STORAGE

Water storage in Arizona varies greatly. San Carlos Reservoir is nearly empty, while Lyman Reservoir contains 20% above average for this date. The Salt River Project reservoirs are slightly less than half full, which is near normal. Lake Pleasant contains about half of average, while the Colorado River reservoirs are 57% above average.

STREAMFLOW AND WATER SUPPLY

Runoff from the early January storms has not been significant as dry soils absorbed the water from the slowly melting snow. Streamflow forecasts (January through May) range from about 30% of average on the Gila to 65% on the Verde.

Water supplies will be adequate in most of Arizona this year if reasonable conservation is practiced. The San Carlos Project, however, has a virtually empty reservoir, and inflow is expected to be only 1/4 of average. Water supplies will also be short in the Safford Valley where heavy pumping will be required.

STREAMFLOW FORECASTS

ABOUT FEBRUARY
1, 1977

| BASIN, STREAM and/or FORECAST POINT | THIS YEAR | | PAST RECORD | | |
|---------------------------------------|-----------------------|-----------------------|-----------------|--------------------|-----------|
| | FORECAST | | FORECAST PERIOD | THOUSAND ACRE FEET | |
| | Thousand Acre Feet | Percent of Average | | Last Year | Average + |
| <u>SALT RIVER DRAINAGE</u> | | | | | |
| Salt near Roosevelt | 133 | 41 | Jan-May | 239.9 | 324.4 |
| " | 18 | 38 | February | 67.0 | 47.5 |
| Tonto Creek near Roosevelt | 13 | 28 | Jan-May | 74.3 | 46.8 |
| " | 3 | 36 | February | 53.1 | 8.4 |
| Verde River above Horseshoe | 124 | 65 | Jan-May | 307.5 | 190.6 |
| " | 22 | 61 | February | 161.8 | 35.9 |
| Total Salt River Project Streams | 270 | 48 | Jan-May | 621.7 | 561.8 |
| " | 43 | 47 | February | 281.9 | 91.8 |
| <u>GILA RIVER DRAINAGE</u> | | | | | |
| Gila River at Calva | 28 | 25 | Jan-May | 40.4 | 112.3 |
| Gila River near Gila | 29 | 52 | Jan-May | 83.9 | 56.1 |
| Gila River near Solomon | 49 | 31 | Jan-May | 94.4 | 157.5 |
| Gila River near Virden | 27 | 35 | Jan-May | 61.5 | 77.2 |
| Frisco River at Clifton | 23 | 30 | Jan-May | 40.7 | 77.6 |
| Frisco River at Glenwood | 8 | 25 | Jan-May | 40.2 | 32.3 |
| <u>LITTLE COLORADO RIVER DRAINAGE</u> | | | | | |
| Little Colo. River above Lyman Dam | 2 | 18 | Jan-June | 17.8 | 11.3 |
| Greer 1/ | 3.5 | 47 | Jan-June | | |
| <u>GRANITE CREEK DRAINAGE</u> | | | | | |
| Granite Creek | 1.9 | --- | Jan-May | --- | --- |
| Willow Creek | .7 | --- | Jan-May | --- | --- |
| <u>MIMBRES RIVER DRAINAGE</u> | | | | | |
| Mimbres River near Mimbres | 1.8 | 42 | Jan-May | 2.5 | 4.3 |
| <u>COLORADO RIVER DRAINAGE</u> | | | | | |
| Virgin River nr. Littlefield | 13 | 30 | Apr-June | 18.9 | 43.2 |
| Lake Mary Inflow | 2.5 | 49 | Jan-May | --- | 5.1 |
| 1/ Includes Filler Ditch Diversion | | | | | |
| + Based on 15-year period, 1958-72 | | | | | |
| * Average is for less than 15 years | | | | | |

RESERVOIR STORAGE (Thousand Acre Feet) END OF MONTH

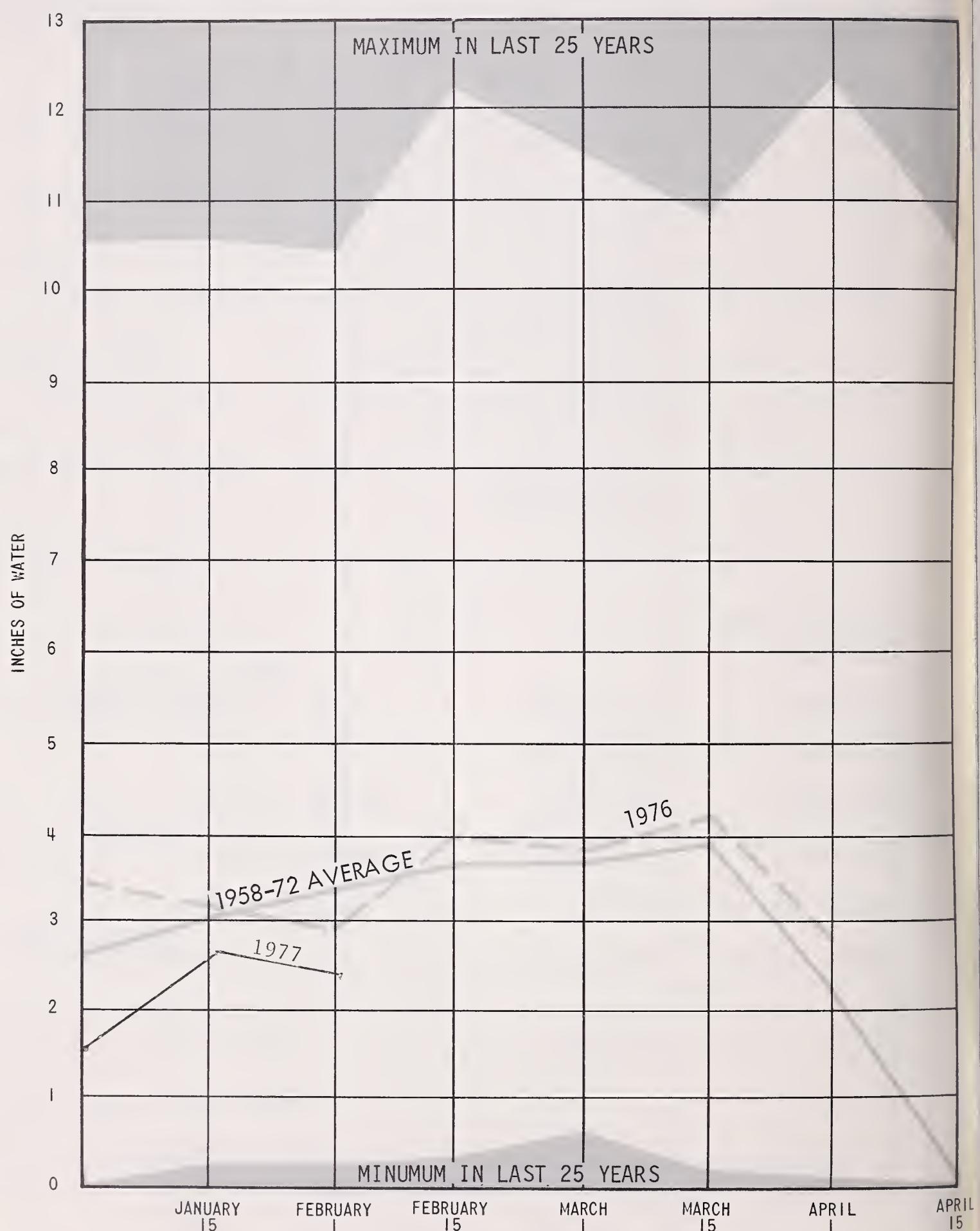
ABOUT FEBRUARY 1, 1977

| BASIN or STREAM | RESERVOIR | Usable Capacity | Usable Storage | | |
|--------------------------------|---|-----------------|----------------|-----------|----------------------|
| | | | This Year | Last Year | Average [†] |
| <u>GILA RIVER DRAINAGE</u> | | | | | |
| Agua Fria | Lake Pleasant | 157.6 | 33.9 | 18.3 | 59.6 |
| Granite | Watson Lake | 4.7 | 2.1 | 1.0 | 2.8* |
| Granite | Willow Creek | 6.1 | 1.2 | 0.9 | 2.5* |
| Gila | San Carlos | 1,093 | 7.7 | 122.8 | 170.9 |
| Salt (4) | Roosevelt, Apache, Canyon & Saguaro | 1,755 | 940.6 | 1,427 | 1,076 |
| Verde (2) | Bartlett and Horseshoe | 317.7 | 54.3 | 27.4 | 127.2 |
| Salt and Verde | 6 Salt River Project Reser- voirs | 2,073 | 994.9 | 1,454 | 1,203 |
| <u>COLORADO RIVER DRAINAGE</u> | | | | | |
| Colorado | Lake Havasu | 619.4 | 542.7 | 548.6 | 544.0 |
| Colorado | Lake Mohave | 1,810 | 1,676.1 | 1,617 | 1,676 |
| Colorado | Lake Mead | 26,159 | 21,988.0 | 20,265 | 17,320 |
| Colorado | Lake Powell | 25,002 | 18,017.0 | 17,254 | 7,290 |
| Little Colorado | Lyman | 30.6 | 15.2 | 21.3 | 12.70 |
| Little Colorado | Show Low Lake | 5.1 | 0.8 | 0.6 | 1.5 |

[†] Based on 15-year period, 1958-72

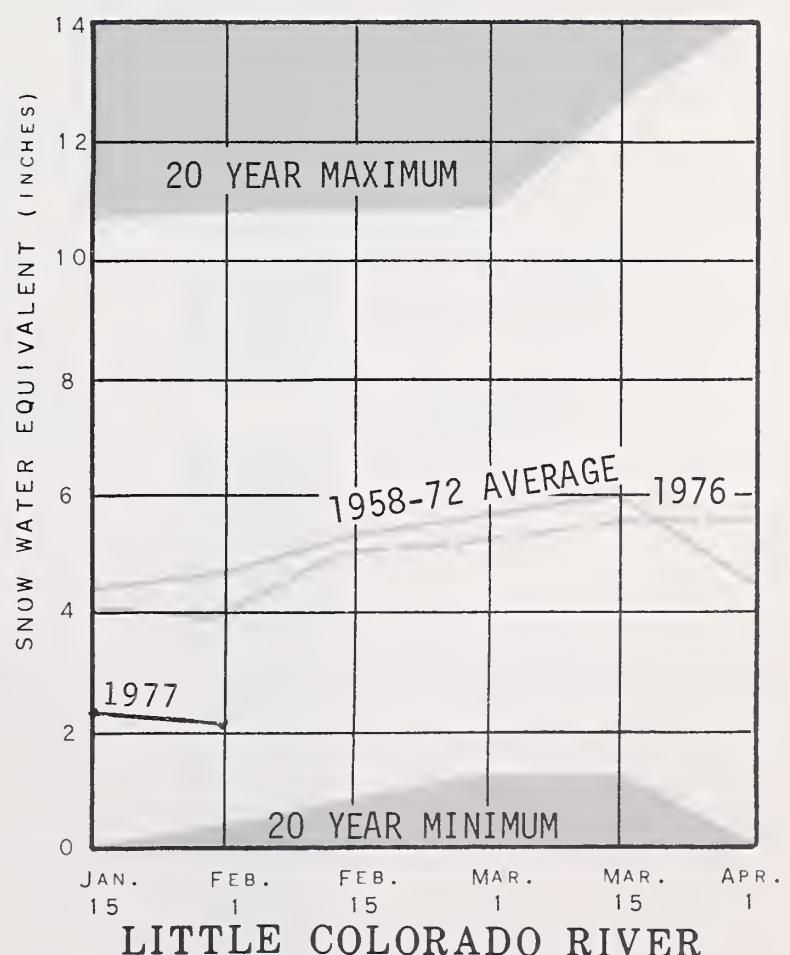
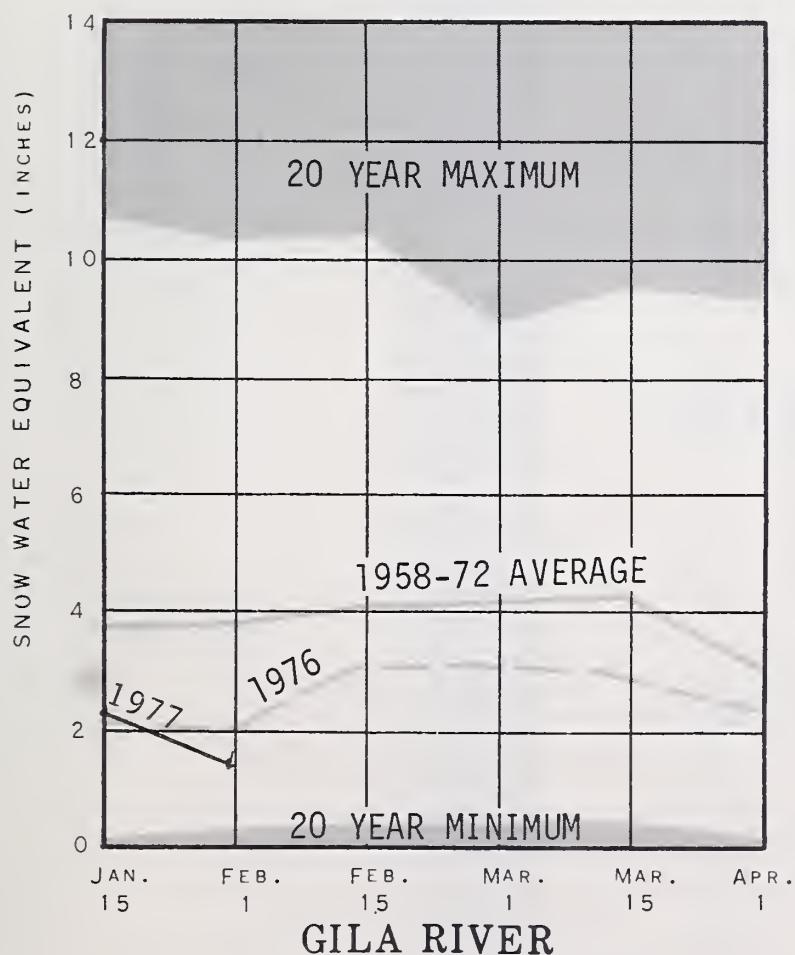
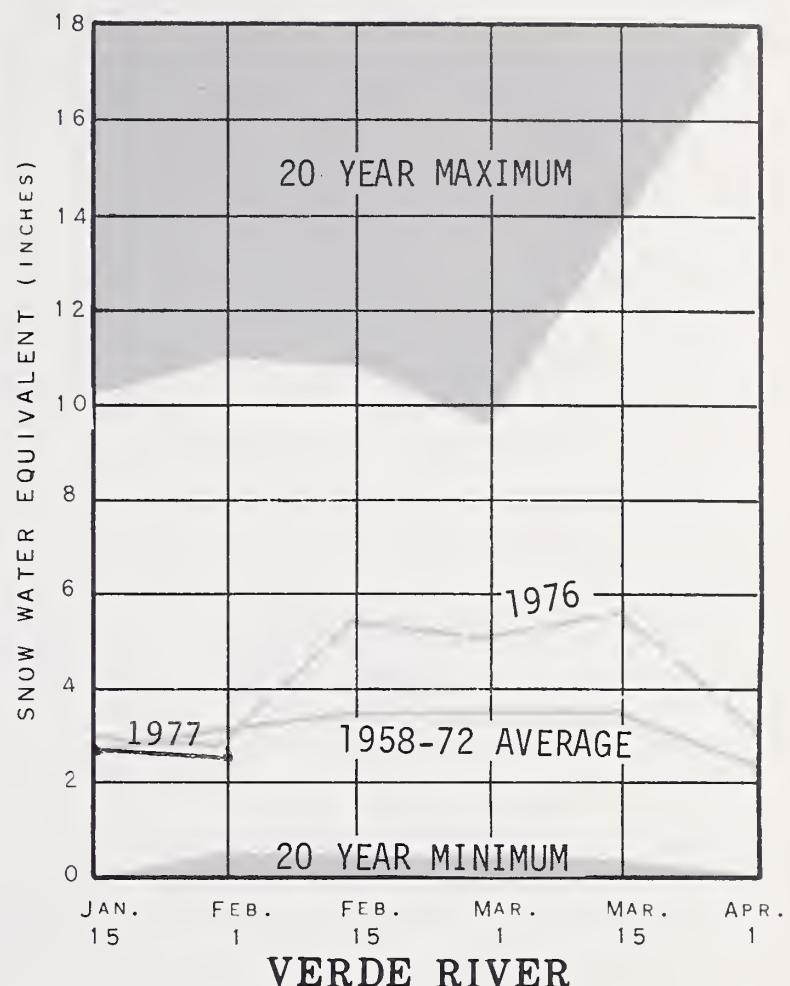
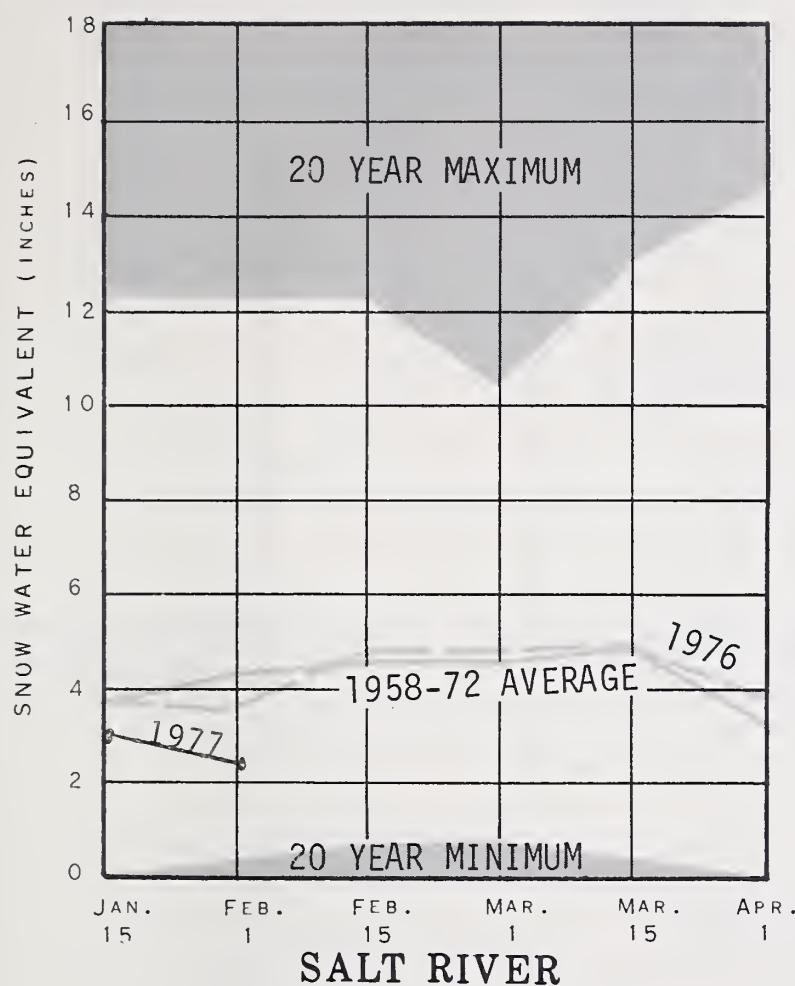
* Average is for less than 15 years of record

AVERAGE SNOW COVER ARIZONA 1977



This graph represents the average snow water content on eleven selected snow courses on Arizona Sub-Watersheds.

1977
WATERSHED SNOW COVER



SUMMARY of SNOW MEASUREMENTS (COMPARISON WITH PREVIOUS YEARS)

ABOUT FEBRUARY 1, 1977

| RIVER BASIN and/or SUB-WATERSHED | Number of Courses Averaged | THIS YEAR'S SNOW WATER AS PERCENT OF: | |
|----------------------------------|----------------------------|---------------------------------------|---------|
| | | Last Year | Average |
| Gila | 10 | 78 | 42 |
| Salt | 10 | 78 | 61 |
| Verde | 10 | 101 | 95 |
| Little Colorado | 5 | 58 | 49 |

WATER SUPPLY INVENTORY SALT RIVER VALLEY SYSTEM

IN ACRE-FEET

FEBRUARY 1, 1977

3,000,000

AVERAGE SUPPLY
ON FEBRUARY 1

2,500,000

ANTICIPATED
1977 SUPPLY

2,000,000

Average Spring
Runoff

1,500,000

Average Summer
Runoff

1,000,000

Average
Storage

500,000

Forecast Runoff
(February-May)

Average Summer
Runoff

Present Storage



Based on Present Storage + Forecast Spring Runoff + Average Summer Runoff



SNOW EARLY SEASON SURVEYS - 1976-77

| DRAINAGE BASIN and/or SNOW COURSE | | THIS YEAR | | | PAST RECORD | |
|-----------------------------------|-----------|----------------|---------------------|------------------------|------------------------|-----------|
| | | Date of Survey | Snow Depth (Inches) | Water Content (Inches) | Water Content (inches) | Last Year |
| NAME | Elevation | | | | | Average + |
| Baker Butte | 7300 | 12/10 1/5 | T 24 | T 4.0 | --- | --- |
| Baker Butte #2 | 7700 | 12/10 1/5 | 2 29 | 0.3 4.5 | --- | --- |
| Baldy | 9125 | 12/5 | 3 | 0.8 | 3.2 | --- |
| Happy Jack | 7630 | 12/10 1/5 | 0 22 | 0.0 3.7 | --- | --- |
| Heber | 7600 | 12/10 | 1 | 0.3 | --- | --- |
| Promontory Butte | 7930 | 12/10 | 2 | 0.4 | 3.7 | --- |
| Mormon Lake | 7350 | 12/10 1/5 | 0 24 | 0.0 3.3 | --- | --- |
| White Horse Lake Jct. | 7150 | 12/10 1/4 | 0 15 | 0.0 2.2 | --- | --- |

SNOW ABOUT JANUARY 15, 1977

| DRAINAGE BASIN and/or SNOW COURSE | | Date of Survey | THIS YEAR | | PAST RECORD | |
|--|-------|----------------|---------------------|------------------------|-------------|-----------|
| | | | Snow Depth (Inches) | Water Content (Inches) | Last Year | Average + |
| GILA RIVER | | | | | | |
| Bear Wallow | 8100 | 1/14 | 15 | 3.6 | 0.4 | 4.0 |
| Beaver Head | 8000 | 1/14 | 9 | 3.2 | 1.9 | 3.0 |
| Coronado Trail | 8000 | 1/14 | 9 | 3.1 | 1.6 | 3.0 |
| Emory Pass #1 * | 7800 | 1/14 | 5 | 1.1 | 0.0 | 0.9** |
| Emory Pass #2 * | 7800 | 1/14 | 6 | 1.2 | 0.4 | 2.0** |
| Frisco Divide | 8000 | 1/14 | 6 | 0.9 | 1.4 | 2.5 |
| Hannagan Meadows * | 9090 | 1/14 | 17 | 3.2 | 4.5 | 6.5** |
| Hummingbird (A) | 10550 | 1/13 | 24 | 5.1 | --- | 9.1** |
| McKnight Cabin * (A) | 9300 | 1/13 | 14 | 2.8 | --- | 3.4** |
| Mogollon | 7000 | 1/14 | 5 | 1.4 | 0.0 | 1.7 |
| Nutrioso | 8500 | 1/14 | 5 | 1.9 | 1.4 | 2.1 |
| Redstone Trail | 8600 | 1/14 | 16 | 3.8 | 3.8 | 6.1** |
| Rose Canyon | 7300 | 1/14 | 16 | 3.6 | 0.6 | 2.6 |
| Silver Creek Divide | 9000 | 1/14 | 21 | 5.0 | 5.0 | 8.8** |
| State Line | 8000 | 1/14 | 8 | 1.1 | 1.6 | 2.7 |
| Whitewater (A) | 10750 | 1/13 | 42 | 7.6 | --- | 10.9** |
| VERDE RIVER | | | | | | |
| Baker Butte | 7300 | 1/14 | 19 | 4.7 | 5.3 | 3.8** |
| Baker Butte #2 | 7700 | 1/14 | 23 | 5.1 | 8.4 | --- |
| Camp Wood | 5700 | 1/14 | 4 | 1.1 | 0.0 | 0.7 |
| Chalender * | 7100 | 1/14 | 11 | 2.0 | 2.7 | 1.8 |
| Copper Basin Divide | 6720 | 1/14 | 13 | 3.1 | 0.6 | 2.0** |
| Fort Valley | 7350 | 1/14 | 12 | 1.7 | 1.6 | 1.2 |
| Gaddes Canyon | 7600 | 1/14 | 15 | 3.4 | 4.3 | 3.0 |
| Happy Jack | 7630 | 1/14 | 19 | 3.6 | 3.3 | 2.1 |
| Iron Springs * | 6200 | 1/14 | 6 | 1.1 | 0.0 | 0.9 |
| Mingus Mountain | 7100 | 1/14 | 10 | 2.4 | 0.0 | 1.0 |
| Mormon Lake * | 7350 | 1/14 | 18 | 4.2 | 5.2 | 2.4 |
| Mormon Mountain | 7500 | 1/14 | 20 | 4.4 | 6.1 | 2.9 |
| Newman Park | 6750 | 1/14 | 15 | 2.8 | 2.8 | 1.6** |
| Snow Bowl #1 | 10260 | 1/14 | 14 | 2.6 | 4.3 | 5.3** |
| Snow Bowl #2 | 11000 | 1/14 | 19 | 3.7 | 5.8 | 1.0** |
| White Horse Lake Jct. | 7150 | 1/13 | 15 | 3.1 | 2.6 | 2.0** |
| White Spar | 6000 | 1/14 | 9 | 2.7 | 0.0 | 1.0** |
| LOWER COLORADO RIVER | | | | | | |
| Bill Williams Intermediate | 8550 | 1/14 | 16 | 3.0 | 5.7 | 4.1** |
| Bill Williams Summit | 8950 | 1/14 | 16 | 3.0 | 5.9 | 5.2** |
| Chalender * | 7100 | 1/14 | 11 | 2.0 | 2.7 | 1.8 |
| Fort Valley | 7350 | 1/14 | 12 | 1.7 | 1.6 | 1.2 |
| Grand Canyon | 7500 | 1/14 | 8 | 2.5 | 1.7 | 1.5 |
| Williams Ski Run | 7720 | 1/13 | 15 | 3.0 | 5.2 | 3.5** |
| + 1958-72 15-year period. (*) Adjacent drainage. (**) 1958-72 Adjusted Average. (A) Aerial observation: water content estimated. | | | | | | |
| Late Arrival | | | | | | |
| Bright Angel | 8400 | 1/14 | 14 | 4.0 | --- | --- |

SNOW ABOUT JANUARY 15, 1977

| DRAINAGE BASIN and/or SNOW COURSE | | THIS YEAR | | | PAST RECORD | |
|-----------------------------------|-------|----------------|---------------------|------------------------|-------------|-----------|
| | | Date of Survey | Snow Depth (Inches) | Water Content (Inches) | Last Year | Average + |
| <u>SALT RIVER</u> | | | | | | |
| Baldy * | 9125 | 1/14 | 13 | 2.3 | 4.8 | 4.9 |
| Beaver Head | 8000 | 1/14 | 9 | 3.2 | 1.9 | 3.0 |
| Canyon Creek | 7500 | 1/14 | 14 | 3.7 | 2.9 | 2.8 |
| Canyon Point | 7600 | 1/14 | 18 | 4.1 | 2.8 | 3.0** |
| Coronado Trail | 8000 | 1/14 | 9 | 3.1 | 1.6 | 3.0 |
| Forest Dale | 6430 | 1/14 | 12 | 2.0 | 1.9 | 1.4 |
| Ft. Apache | 9160 | 1/14 | 14 | 1.8 | 4.8 | 5.2 |
| Hannagan Meadows | 9090 | 1/14 | 17 | 3.2 | 4.5 | 6.5** |
| Hawley Lake | 8300 | 1/14 | 21 | 4.4 | 5.3 | 4.3** |
| Heber | 7600 | 1/14 | 16 | 4.0 | 2.9 | 2.9 |
| Maverick Fork | 9050 | 1/14 | 17 | 3.2 | 4.8 | 5.8 |
| McNary | 7200 | 1/14 | 17 | 3.1 | 3.4 | 2.1 |
| Milk Ranch | 7000 | 1/14 | 15 | 3.1 | 1.4 | 1.5 |
| Mt. Ord (A) | 11000 | 1/14 | 48 | 8.6 | 8.4 | 14.5** |
| Nutrioso * | 8500 | 1/14 | 5 | 1.9 | 1.4 | 2.1 |
| Promontory Butte | 7930 | 1/14 | 27 | 6.8 | 7.0Est | --- |
| Smith Cienega (A) | 9850 | 1/14 | 32 | 6.4 | 7.4 | --- |
| Sunrise Summit | 10600 | 1/13 | 25 | 5.4 | 7.0 | --- |
| Wilson Lake | 9000 | 1/13 | 18 | 3.0 | 5.7 | 7.3** |
| Workman Creek | 6900 | 1/12 | 22 | 4.4 | 6.2 | 4.3 |
| <u>LITTLE COLORADO RIVER</u> | | | | | | |
| Baldy | 9125 | 1/14 | 13 | 2.3 | 4.8 | 4.9 |
| Canyon Creek | 7500 | 1/14 | 14 | 3.7 | 2.9 | 2.8 |
| Canyon Point | 7600 | 1/14 | 18 | 4.1 | 2.8 | 3.0** |
| Cheese Springs | 8600 | 1/13 | 14 | 1.5 | 4.3 | 4.8** |
| Forest Dale | 6430 | 1/14 | 12 | 2.0 | 1.9 | 1.4 |
| Ft. Apache | 9160 | 1/14 | 14 | 1.8 | 4.8 | 5.2 |
| Fort Valley | 7350 | 1/14 | 12 | 1.7 | 1.6 | 1.2 |
| Happy Jack * | 7630 | 1/14 | 19 | 3.6 | 3.3 | 2.1 |
| Heber | 7600 | 1/14 | 16 | 4.0 | 2.9 | 2.9 |
| Lake Mary | 6970 | 1/14 | 12 | 2.2 | 5.4 | --- |
| McNary | 7200 | 1/14 | 17 | 3.1 | 3.4 | 2.1 |
| Mormon Lake | 7350 | 1/14 | 18 | 4.2 | 5.2 | 2.4 |
| Mormon Mountain | 7500 | 1/14 | 20 | 4.4 | 6.1 | 2.9 |
| Nutrioso * | 8500 | 1/14 | 5 | 1.9 | 1.4 | 2.1 |
| Promontory Butte | 7930 | 1/14 | 27 | 6.8 | 7.0Est | --- |
| Snow Bowl #1 | 10260 | 1/14 | 14 | 2.6 | 4.3 | 5.3** |
| Snow Bowl #2 | 11000 | 1/14 | 19 | 3.7 | 5.8 | 10.0** |
| Wilson Lake | 9000 | 1/13 | 18 | 3.0 | 5.7 | 7.3** |

+ 1958-72 15-year period. (*) Adjacent drainage. (**) 1958-72 Adjusted Average. (A) Aerial observation: water content estimated.

SNOW ABOUT FEBRUARY 1, 1977

| DRAINAGE BASIN and/or SNOW COURSE | | THIS YEAR | | | PAST RECORD | |
|-----------------------------------|-----------|----------------|---------------------|------------------------|------------------------|-----------|
| | | Date of Survey | Snow Depth (Inches) | Water Content (Inches) | Water Content (inches) | Last Year |
| NAME | Elevation | | | | | Average + |
| <u>GILA RIVER</u> | | | | | | |
| Bear Wallow | 8100 | 1/31 | 11 | 3.4 | 0.0 | 4.6 |
| Beaver Head | 8000 | 1/31 | 3 | 0.8 | 1.3 | 3.1 |
| Coronado Trail | 8000 | 1/31 | 2 | 0.6 | 0.3 | 2.9 |
| Emory Pass #1 * | 7800 | 1/31 | 5 | 0.6 | 0.0 | 0.3** |
| Emory Pass #2 * | 7800 | 1/31 | 8 | 1.8 | 0.4 | 1.2** |
| Frisco Divide | 8000 | 1/31 | 4 | 0.8 | 1.6 | 2.4 |
| Hannagan Meadows * | 9090 | 1/31 | 17 | 3.7 | 5.2 | 7.0** |
| Hummingbird (A) | 10550 | 1/31 | 24 | 6.2 | 7.3 | 10.2** |
| McKnight Cabin * (A) | 9300 | 1/31 | 14 | 3.5 | 1.6 | 3.5** |
| Mogollon | 7000 | 1/30 | 0 | 0.0 | 0.0 | 1.6 |
| Nutrioso | 8500 | 1/31 | 2 | 0.4 | 1.1 | 2.1 |
| Redstone Trail | 8600 | 1/30 | 15 | 3.8 | 4.0 | 6.6** |
| Rose Canyon | 7300 | 1/31 | 9 | 2.4 | 0.0 | 2.9 |
| Silver Creek Divide | 9000 | 1/30 | 22 | 5.8 | 5.7 | 9.5** |
| State Line | 8000 | 1/31 | 2 | 0.4 | 1.2 | 2.6 |
| Whitewater (A) | 10750 | 1/31 | 48 | 8.6 | 8.6 | 12.7** |
| <u>VERDE RIVER</u> | | | | | | |
| Baker Butte | 7300 | 1/31 | 12 | 4.5 | 4.8 | 4.9** |
| Baker Butte #2 | 7700 | 1/31 | 18 | 5.8 | 8.7 | --- |
| Camp Wood | 5700 | 1/31 | 0 | 0.0 | 0.0 | 0.6 |
| Chalender * | 7100 | 1/31 | 6 | 1.9 | 2.2 | 2.1 |
| Copper Basin Divide | 6720 | 1/31 | 5 | 1.9 | T | 1.6** |
| Fort Valley | 7350 | 1/31 | 6 | 1.6 | 0.9 | 1.6 |
| Gaddes Canyon | 7600 | 1/28 | 11 | 2.7 | 3.9 | 3.5 |
| Happy Jack | 7630 | 1/31 | 13 | 4.3 | 2.7 | 2.4 |
| Iron Springs * | 6200 | 1/31 | 0 | 0.0 | 0.0 | 0.8 |
| Mingus Mountain | 7100 | 1/28 | 2 | 0.7 | 0.0 | 1.0 |
| Mormon Lake * | 7350 | 1/31 | 14 | 4.6 | 5.0 | 3.0 |
| Mormon Mountain | 7500 | 1/31 | 13 | 4.5 | 5.4 | 3.6 |
| Newman Park | 6750 | 1/31 | 6 | 1.9 | 1.0 | 1.6** |
| Snow Bowl #1 | 10260 | 1/31 | 12 | 2.6 | 4.0 | 7.3** |
| Snow Bowl #2 | 11000 | 1/31 | 16 | 4.1 | 5.2 | 12.5** |
| White Horse Lake Jct. | 7150 | 1/31 | 8 | 2.8 | 1.8 | 2.5** |
| White Spar | 6000 | 1/31 | 0 | 0.0 | 0.0 | 0.7** |
| <u>LOWER COLORADO RIVER</u> | | | | | | |
| Bill Williams Intermediate | 8550 | 1/31 | 13 | 2.8 | 5.8 | 6.1** |
| Bill Williams Summit | 8950 | 1/31 | 14 | 3.0 | 6.0 | 7.6** |
| Chalender * | 7100 | 1/31 | 6 | 1.9 | 2.2 | 2.1 |
| Fort Valley | 7350 | 1/31 | 6 | 1.6 | 0.9 | 1.6 |
| Grand Canyon | 7500 | 1/31 | 4 | 1.1 | 0.0 | 1.6 |
| Williams Ski Run | 7720 | 1/31 | 12 | 3.3 | 6.0 | 4.7** |

+ 1958-72 15-year period. (*) Adjacent drainage. (**) 1958-72 Adjusted Average. (A) Aerial observation: water content estimated.

SNOW ABOUT FEBRUARY 1, 1977

| DRAINAGE BASIN and/or SNOW COURSE | | THIS YEAR | | | PAST RECORD | |
|-----------------------------------|-------|----------------|---------------------|------------------------|------------------------|-----------|
| | | Date of Survey | Snow Depth (Inches) | Water Content (Inches) | Water Content (inches) | Last Year |
| <u>SALT RIVER</u> | | | | | | |
| Baldy * | 9125 | 1/31 | 14 | 2.6 | 5.4 | 5.7 |
| Beaver Head | 8000 | 1/31 | 3 | 0.8 | 1.3 | 3.1 |
| Canyon Creek | 7500 | 1/31 | 10 | 3.4 | 3.1 | 3.1 |
| Canyon Point | 7600 | 1/31 | 14 | 4.7 | 3.1 | 3.3** |
| Coronado Trail | 8000 | 1/31 | 3 | 0.8 | 0.3 | 2.9 |
| Forest Dale | 6430 | 1/31 | 5 | 1.8 | 1.2 | 1.1 |
| Ft. Apache | 9160 | 1/31 | 15 | 2.1 | 6.0 | 6.0 |
| Hannagan Meadows | 9090 | 1/31 | 17 | 3.7 | 5.2 | 7.0** |
| Hawley Lake | 8300 | 1/31 | 17 | 5.0 | 5.3 | 5.8** |
| Heber | 7600 | 1/31 | 12 | 3.9 | 2.4 | 3.2 |
| Maverick Fork | 9050 | 1/31 | 18 | 4.0 | 5.8 | 6.9 |
| McNary | 7200 | 1/31 | 10 | 3.0 | 1.8 | 2.1 |
| Milk Ranch | 7000 | 1/31 | 7 | 2.0 | 0.2 | 1.5 |
| Mt. Ord (A) | 11000 | 2/1 | 44 | 9.2 | 12.9 | 17.0** |
| Nutrioso * | 8500 | 1/31 | 2 | 0.4 | 1.1 | 2.1 |
| Promontory Butte | 7930 | 1/31 | 23 | 8.3 | 7.3 | --- |
| Smith Cienega (A) | 9850 | 2/1 | 26 | 7.0 | 8.7 | --- |
| Sunrise Summit | 10600 | 1/28 | 22 | 6.0 | 7.7 | --- |
| Wilson Lake | 9000 | 1/31 | 19 | 3.6 | 5.9 | 7.8** |
| Workman Creek | 6900 | 2/1 | 12 | 4.2 | 5.4 | 4.9 |
| <u>LITTLE COLORADO RIVER</u> | | | | | | |
| Baldy | 9125 | 1/31 | 14 | 2.6 | 5.4 | 5.7 |
| Canyon Creek | 7500 | 1/31 | 10 | 3.4 | 3.1 | 3.1 |
| Canyon Point | 7600 | 1/31 | 14 | 4.7 | 3.1 | 3.3** |
| Cheese Springs | 8600 | 1/31 | 13 | 2.0 | 4.6 | 5.6** |
| Forest Dale | 6430 | 1/31 | 5 | 1.8 | 1.2 | 1.1 |
| Ft. Apache | 9160 | 1/31 | 15 | 2.1 | 6.0 | 6.0 |
| Fort Valley | 7350 | 1/31 | 6 | 1.6 | 0.9 | 1.6 |
| Happy Jack * | 7630 | 1/31 | 13 | 4.3 | 2.7 | 2.4 |
| Heber | 7600 | 1/31 | 12 | 3.9 | 2.4 | 3.2 |
| Inner Basin #1 | 10100 | --- | -- | --- | 8.2E | 13.4** |
| Inner Basin #2 | 9750 | --- | -- | --- | 6.0E | 8.6** |
| Lake Mary | 6970 | 1/31 | 8 | 2.4 | 5.0 | --- |
| McNary | 7200 | 1/31 | 10 | 3.0 | 1.8 | 2.1 |
| Mormon Lake | 7350 | 1/31 | 14 | 4.6 | 5.0 | 3.0 |
| Mormon Mountain | 7500 | 1/31 | 13 | 4.5 | 5.4 | 3.6 |
| Nutrioso * | 8500 | 1/31 | 2 | 0.4 | 1.1 | 2.1 |
| Promontory Butte | 7930 | 1/31 | 23 | 8.3 | 7.3 | --- |
| Snow Bowl #1 | 10260 | 1/31 | 12 | 2.6 | 4.0 | 7.3** |
| Snow Bowl #2 | 11000 | 1/31 | 16 | 4.1 | 5.2 | 12.5** |
| Wilson Lake | 9000 | 1/31 | 19 | 3.6 | 5.9 | 7.8** |

+ 1958-72 15-year period. (*) Adjacent drainage. (**) 1958-72 Adjusted Average. (A) Aerial observation: water content estimated. E = Estimate

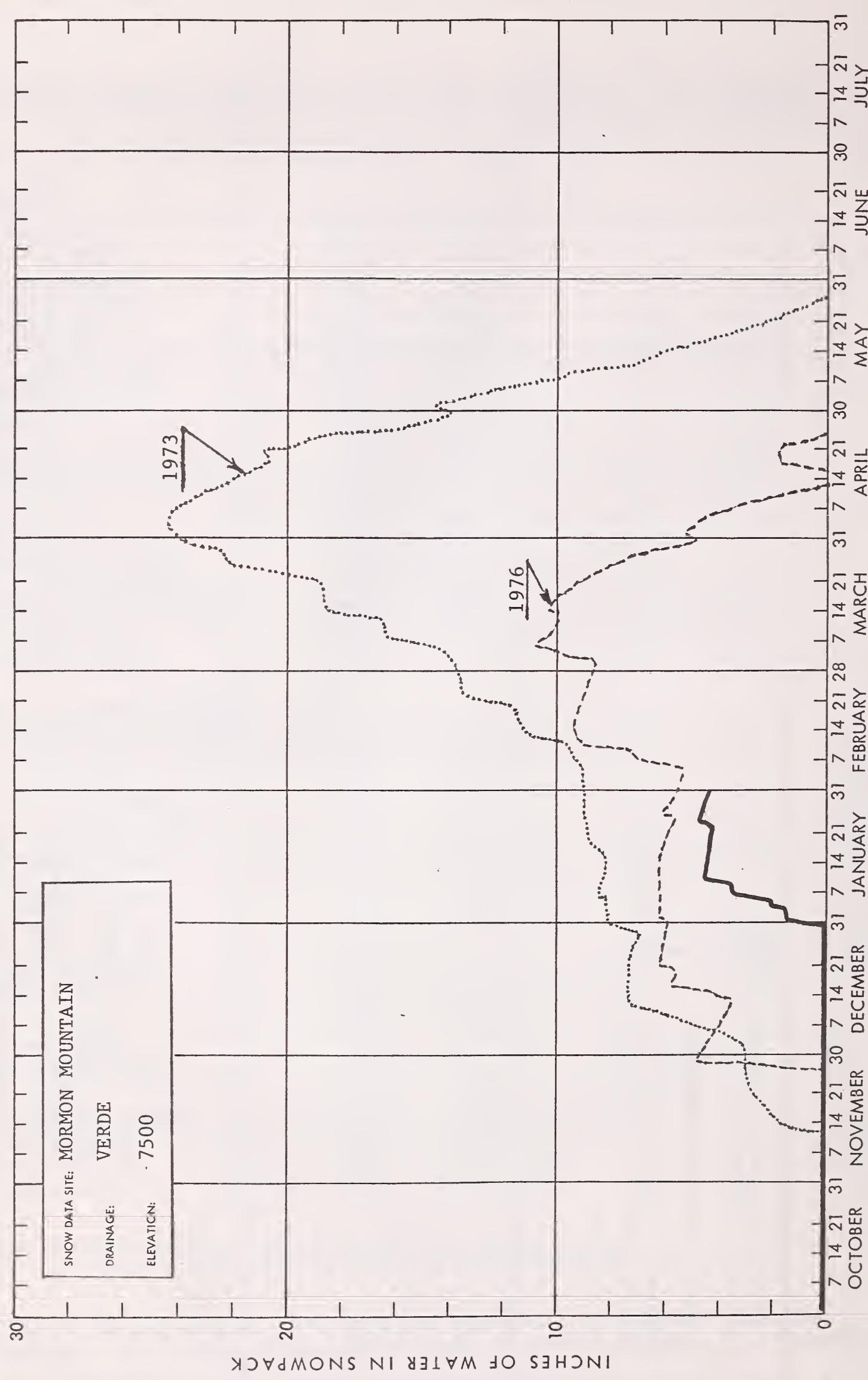
SNOW PILLOW DATA

1977

SNOW PILLOW DATA

1977

SNOW DATA SITE: MORMON MOUNTAIN
DRAINAGE: VERDE
ELEVATION: 7500



PRECIPITATION (Inches)

ABOUT FEBRUARY 1, 1977

| DRAINAGE BASIN and PRECIPITATION GAGE LOCATION | ELEVATION | CURRENT INFORMATION | | | FROM APPROX. NOV. 1 TO DATE | | |
|--|-----------|---------------------|-----------------------|-----------|-----------------------------|-----------|--------------------|
| | | Date of Reading | Month's Precipitation | Average + | This Year | Average + | Percent of Average |
| <u>GILA RIVER</u> | | | | | | | |
| Silver Creek Divide | 9000 | 1/31 | 3.70 | 1.67* | 5.31 | 9.66* | 55 |
| Hannagan Meadows ** | 9030 | 1/31 | 2.70 | 2.13 | 4.70 | 8.50 | 55 |
| Frisco Divide ** | 8000 | 1/31 | 1.25 | --- | 2.10 | --- | -- |
| <u>SALT RIVER</u> | | | | | | | |
| Canyon Point | 7600 | 1/31 | 4.10 | 2.72* | 6.30 | 10.98* | 57 |
| Hannagan Meadows ** | 9030 | 1/31 | 2.70 | 2.13 | 4.70 | 8.50 | 55 |
| Little Wildcat (Heber Snow Course) | 7600 | 1/31 | 4.24 | 2.43 | 6.01 | 9.34 | 64 |
| Maverick Fork | 9050 | 1/27 | 3.13 | 2.03 | 5.14 | 7.95 | 65 |
| Workman Creek ** | 6970 | 2/1 | 4.40 | 3.34 | 7.20 | 11.46 | 63 |
| Wilson Lake | 9100 | 1/28 | 2.10 | 2.52* | 3.70 | 8.18* | 45 |
| <u>VERDE RIVER</u> | | | | | | | |
| Baker Butte | 7300 | 1/31 | 3.82 | 3.02* | 5.76 | 11.09* | 52 |
| Copper Basin Divide | 6720 | 1/31 | 3.62 | 1.50* | 4.62 | 6.78* | 68 |
| Fort Valley ** | 7350 | 1/31 | 1.61 | 1.40 | 2.71 | 5.42 | 50 |
| Happy Jack ** | 7480 | 1/31 | 4.23 | 1.90 | 4.41 | 6.88 | 64 |
| Mingus Mountain | 7660 | 1/31 | 2.00 | 1.40 | 2.98 | 5.56 | 54 |
| Mormon Mountain | 7500 | 1/31 | 4.05 | 2.23* | 5.99 | 10.17* | 59 |
| White Horse Lake Jct.** | 7150 | 1/31 | 2.49 | --- | 3.94 | --- | --- |
| <u>LITTLE COLORADO</u> | | | | | | | |
| Inner Basin #1 | 9830 | --- | --- | 2.06 | --- | 10.19 | --- |
| Inner Basin #2 | 10050 | --- | --- | 2.49* | --- | 11.85* | --- |
| Greer Lakes | 8500 | 1/27 | .66 | .98 | 1.56 | 4.30 | 36 |
| Little Wildcat (Heber Snow Course) | 7600 | 1/31 | 4.24 | 2.43 | 6.01 | 9.34 | 64 |
| Sheep Crossing (Baldy Snow Course) | 9125 | 1/27 | 1.87 | 2.29 | 3.66 | 7.75 | 47 |

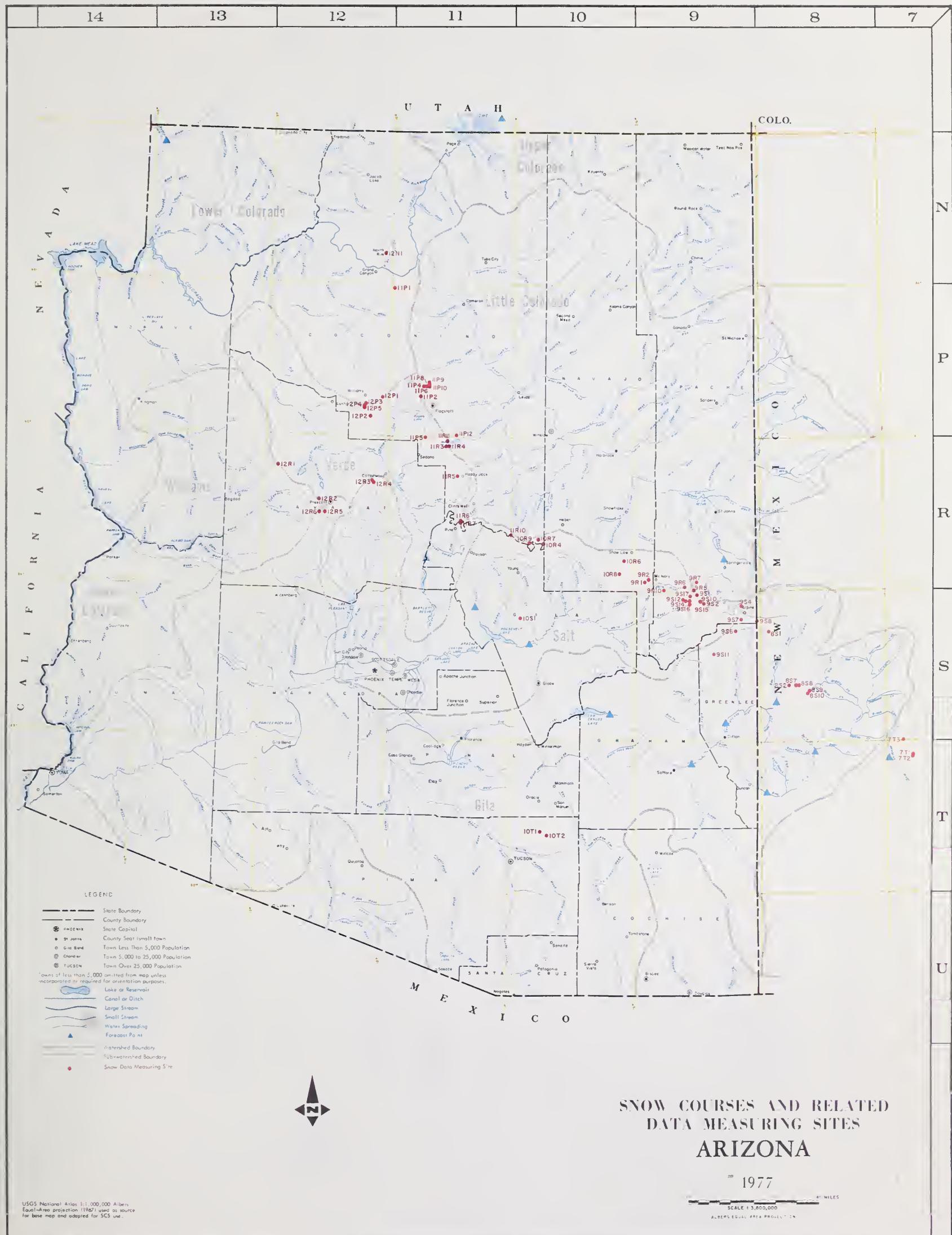
+ 1958-72 Average

* Adjusted Average

** Data Supplied by
U.S. Forest Service

SOIL MOISTURE ABOUT FEBRUARY 1, 1977

| DRAINAGE BASIN and/or STATION | | Profile (Inches) | | Date of Survey | Soil Moisture (Inches) | | |
|-------------------------------|-----------|------------------|----------|----------------|------------------------|-----------|-----------|
| Name | Elevation | Depth | Capacity | | This Year | Last Year | Average + |
| <u>GILA RIVER</u> | | | | | | | |
| Frisco Divide | 8000 | 48 | 13.3 | 1/31 | 6.3 | 10.3 | 9.3 |
| <u>SALT RIVER</u> | | | | | | | |
| Black River Divide | 9100 | 48 | 16.8 | 1/27 | 16.7 | 16.3 | 16.3 |
| Canyon Creek | 7500 | 48 | 18.3 | 1/31 | 13.8 | 16.0 | 15.8 |
| Corduroy Creek | 6000 | 36 | 13.5 | 1/28 | 7.5 | 6.8 | 9.1 |
| McNary | 7200 | 48 | 16.3 | 1/28 | 14.0 | 14.3 | 15.0 |
| <u>VERDE RIVER</u> | | | | | | | |
| Mormon Mountain | 7500 | 48 | 16.1 | 1/31 | 13.8 | 15.8 | 15.5 |
| Newman Park | 6750 | 48 | 17.7 | 1/31 | 11.2 | 12.1 | 17.2 |
| + 1958-72 15-year average | | | | | | | |



INDEX to SNOW COURSES and SOIL MOISTURE STATIONS

| NUMBER | NAME | SEC. | TWP. | RGE. | ELEV. | DRAINAGE | OBSERVER | RECORD BEGAN |
|-------------|---------------------------|------|------|-------|-------|--------------------|----------|--------------|
| 11P10A | Agassiz | 32 | 23N | 7E | 11200 | Little Colorado | SCS-CF* | 1968 |
| 11R7 | Baker Butte #2 | 9 | 12N | 9E | 7700 | Verde | SCS | 1971 |
| 11R6PSPRT | Baker Butte | 4 | 12N | 9E | 7300 | Verde | SCS | 1966 |
| 9S1APSPRT | Baldy | 28 | 7N | 27E | 9125 | Little Colorado | SCS | 1950 |
| 9S15 | Baldy #2 | 12 | 6N | 26E | 9750 | Little Colorado | SCS | 1963 |
| 9S16 | Baldy #3 | 13 | 6N | 26E | 10950 | Little Colorado | SCS | 1963 |
| 10T1 | Bear Wallow | 6 | 12S | 16E | 8100 | Gila | FS | 1948 |
| 9S6 | Beaver Head | 13 | 4N | 30E | 8000 | San Francisco | FS | 1938 |
| 12P5 | Bill William Intermediate | 17 | 21N | 2E | 8550 | Cataract | FS | 1967 |
| 12P4 | Bill Williams Summit | 17 | 21N | 2E | 8950 | Verde | FS | 1967 |
| 9S10m | Black River Divide | 10 | 6N | 27E | 9400 | Salt | SCS | 1954 |
| 12N1 | Bright Angel | 34 | 33N | 3E | 8400 | Bright Angel Creek | NPS | 1947 |
| 12R1 | Camp Wood | 3 | 16N | 6W | 5700 | Verde | FS | 1946 |
| 10R7M | Canyon Creek #2 | 18 | 11N | 15E | 7500 | Little Colorado | SCS | 1958 |
| 10R9P | Canyon Point | 28 | 11N | 14E | 7600 | Salt | SCS | 1967 |
| 12P1M | Chalender | 27 | 22N | 3E | 7100 | Verde | FS | 1947 |
| 9R7 | Cheese Springs | 28 | 8N | 27E | 8600 | Little Colorado | SCS | 1969 |
| 12R6P | Copper Basin Divide | 23 | 13N | 3W | 6720 | Verde | SCS | 1963 |
| 10R8m | Corduroy Creek | 4 | 8N | 21E | 6000 | Salt | SCS | 1954 |
| 9S7 | Coronado Trail | 26 | 5N | 30E | 8000 | San Francisco | FS | 1938 |
| 7T1 | Emory Pass #1 | 16 | 16S | 9W** | 7800 | Mimbres | SCS | 1967 |
| 7T2 | Emory Pass #2 | 16 | 16S | 9W** | 7800 | Mimbres | SCS | 1967 |
| 10R6 | Forest Dale | 2 | 9N | 21E | 6430 | Salt | BIA | 1939 |
| 9R5 | Ft. Apache | 18 | 7N | 27E | 9160 | Little Colorado | SCS | 1951 |
| 11P2P | Ft. Valley | 22 | 22N | 6E | 7350 | Little Colorado | FS | 1947 |
| 8S1MP | Frisco Divide | 31 | 6S | 20W** | 8000 | San Francisco | FS | 1938 |
| 12R4 | Gaddes Canyon | 11 | 15N | 2E | 7600 | Verde | SCS | 1954 |
| 11P1 | Grand Canyon | 21 | 30N | 4E | 7500 | Hance Creek | NPS | 1947 |
| 9S11P | Hannagan Meadows | 19 | 3N | 29E | 9090 | San Francisco | FS | 1964 |
| 11R5P | Happy Jack | 30 | 16N | 9E | 7630 | Verde | FS | 1951 |
| 9R10 | Hawley Lake | 13 | 7N | 24E | 8300 | Salt | BIA | 1966 |
| 10R4PSP | Heber | 28 | 11N | 15E | 7600 | Little Colorado | SCS | 1950 |
| 8S9A | Hummingbird | 19 | 11S | 17W** | 10550 | Gila | SCS | 1964 |
| 11P9P | Inner Basin #1 | 28 | 23N | 7E | 10000 | Little Colorado | SCS | 1967 |
| 11P8P | Inner Basin #2 | 28 | 23N | 7E | 9750 | Little Colorado | SCS | 1967 |
| 12R2 | Iron Springs | 22 | 14N | 3W | 6200 | Little Colorado | SCS | 1946 |
| 11P12 | Lake Mary | 21 | 19N | 9E | 6930 | Little Colorado | SCS | 1975 |
| 9S2APSPRT | Maverick Fork | 13 | 6N | 27E | 9150 | Salt | SCS | 1950 |
| 7S3A | McKnight Cabin | 10 | 15S | 10W** | 9300 | Mimbres | SCS | 1967 |
| 9R2MPSPRT | McNary | 23 | 8N | 23E | 7200 | Salt | BIA | 1939 |
| 9R1 | Milk Ranch | 33 | 8N | 23E | 7000 | Salt | BIA | 1941 |
| 12R3 | Mingus Mountain | 3 | 15N | 2E | 7100 | Verde | SCS | 1947 |
| 8S2 | Mogollon | 2 | 11S | 19W** | 7000 | San Francisco | SCS | 1953 |
| 11R4 | Mormon Lake | 13 | 18N | 8E | 7350 | Little Colorado | SCS | 1947 |
| 11R3MAPSPRT | Mormon Mountain | 14 | 18N | 8E | 7500 | Verde | SCS | 1950 |
| 11R11 | Mormon Mountain Summit | 2 | 18N | 8E | 8470 | Little Colorado | SCS | 1975 |
| 9S12A | Mt. Ord | 4 | 6N | 26E | 11200 | Salt | SRP-SCS | 1966 |
| 11P5M | Newman Park | 25 | 19N | 6E | 6750 | Verde | SCS | 1963 |
| 9S4 | Nutrioso | 23 | 6N | 30E | 8500 | San Francisco | FS | 1938 |
| 11R10 | Promotory Butte | 5 | 11N | 13E | 7930 | Little Colorado | SCS | 1973 |
| 8S7 | Redstone Trail | 5 | 11S | 18W** | 8600 | San Francisco | SCS | 1961 |
| 10T2 | Rose Canyon | 15 | 12S | 16E | 7300 | Gila | FS | 1948 |
| 8S8PSPRT | Silver Creek Divide | 4 | 11S | 18W** | 9000 | San Francisco | SCS | 1964 |
| 9S14A | Smith Cienega | 10 | 6N | 26E | 10050 | Salt | SRP-SCS | 1966 |
| 11P4 | Snow Bowl #1 | 36 | 23N | 6E | 10260 | Verde | FS | 1961 |
| 11P6 | Snow Bowl #2 | 31 | 23N | 7E | 11000 | Verde | FS | 1965 |
| 9S8 | State Line | 6 | 6S | 21W** | 8000 | San Francisco | FS | 1938 |
| 9S17 | Sunrise Summit | 36 | 7N | 26E | 10600 | Salt | SCS | 1972 |
| 12P2P | White Horse Lake Jct. | 2 | 20N | 2E | 7180 | Verde | FS | 1967 |
| 12R5 | White Spar | 19 | 13N | 2W | 6000 | Verde | SCS | 1963 |
| 8S10A | Whitewater | 19 | 11S | 17W** | 10750 | Gila | SCS | 1964 |
| 12P3 | Williams Ski Run | 9 | 21N | 2E | 7720 | Cataract | FS | 1967 |
| 9R6P | Wilson Lake | 4 | 7N | 26E | 9000 | Salt | SCS | 1966 |
| 10S1P | Workman Creek | 33 | 6N | 14E | 6900 | Salt | FS | 1952 |

A Aerial Snow Depth Marker

M Soil Moisture Station

m Soil Moisture Station Only

P Precipitation Storage Gage

R Radio Telemetry

SP Snow Pressure Pillow

T Temperature

** NM Principal Meridian

* City of Flagstaff

The Following Organizations Cooperate in the Arizona Snow Survey Work

FEDERAL

Department of Agriculture
Soil Conservation Service
Forest Service
 Apache-Sitgreaves Forest
 Coconino Forest
 Coronado Forest
 Gila Forest
 Kaibab Forest
 Prescott Forest
 Rocky Mountain Forest and Range Experiment Station
 Tonto Forest
Department of Commerce
 NOAA, National Weather Service
Department of Interior
 Bureau of Reclamation
 Region 111
 Geological Survey
 Arizona District
 New Mexico District
 Bureau of Indian Affairs
 Fort Apache Reservation
 San Carlos Irrigation Project
 National Park Service
 Grand Canyon National Park
 Gila Water Commissioner
 Safford, Arizona

STATE

Arizona Game and Fish Department
Arizona State Parks Board
Arizona Water Commission
University of Arizona
 Arizona Agricultural Experiment Station
 Water Resource Research Center
 Department of Watershed Management

MUNICIPAL

City of Flagstaff

IRRIGATION PROJECTS

Salt River Valley Water User's Association
 Phoenix, Arizona
San Carlos Irrigation and Drainage District
 Coolidge, Arizona
Maricopa County Municipal Water Conservation District

PRIVATE

Southwest Forest Industries, Inc.
 McNary, Arizona
Fort Apache Indian Reservation
 White Mountain Recreation Enterprises

Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.



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with the Snow Survey”*